

## First Records of *Noctua pronuba* L., an Old World Moth, in Virginia (Lepidoptera: Noctuidae)

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The large yellow underwing moth (*Noctua pronuba* L.) is native to Europe and northern Africa, ranging eastward to India (Lafontaine, 1998). It was introduced into North America at Halifax, Nova Scotia around 1979 (Neil, 1981) and is now abundant in the northeastern United States and adjacent portions of Canada (Lafontaine, 1998). This species is not illustrated in the Peterson Field Guide on moths (Covell, 1984), but color figures are available in Lafontaine (1998) and Grehn et al. (1995). The genitalia are illustrated in Passoa & Hollingsworth (1996) and Lafontaine (1998). Adults of *N. pronuba* are moderately large (forewing length ca. 25 mm), exhibit a generally dark, but highly variable dorsal coloration (head, back, and forewings), and possess a bright yellow hind wing with a dark marginal band.

The life history of *N. pronuba* is well documented. Larvae feed on a wide variety of weedy and cultivated herbaceous plants including grasses, chrysanthemums, carnations, strawberries, tomatoes, potatoes, grapes, carrots, beets, cabbage, and lettuce (Passoa & Hollingsworth, 1996). There is a single adult brood; the flight period extends from mid-June to late September (Lafontaine, 1998).

Passoa & Hollingsworth (1996) listed all records of *N. pronuba* from the northeastern United States that were known to them as of 1995. Many localities were represented by a single specimen, whereas numerous moths had been collected at one site in eastern Massachusetts. These authors provided records for *N. pronuba* from five New England states plus New York and Maryland. Records were apparently lacking from Delaware, New Jersey, Pennsylvania, and Rhode Island. This species was first recorded in Maryland (Howard

Co.) in 1992; during 1993-94 it was documented in six additional counties in that state (Passoa & Hollingsworth, 1996). All records were based on a single specimen. Lafontaine (1998) reported that the current North American range of *N. pronuba* extends from Newfoundland west to Michigan and Wisconsin (first recorded in both states in 1995) and south to Maryland and North Carolina. His range map includes the aforementioned sites in Maryland plus one locality (1997 record) in extreme northwestern North Carolina near the common border of North Carolina, Virginia, and Tennessee. No records are plotted for either of the latter two states.

Staff biologists and contractors of the Division of Natural Heritage (DNH) have sampled rather extensively for nocturnal Lepidoptera in Virginia during the past decade. Numerous surveys in northern Virginia (principally Prince William Forest Park, Prince William County during 1988-89 and 1992), along the Blue Ridge Parkway in western Virginia (1992-94), and at several sites in southeastern Virginia failed to document the presence of *N. pronuba* in the state prior to 1995 (DNH, unpublished data). Sampling at various additional sites throughout Virginia during the 1995-1997 field seasons also failed to result in the capture of this species. The 1997 capture of *N. pronuba* in western North Carolina near the Virginia border certainly suggests that this species had reached Virginia by that year. However, the first documented records of *N. pronuba* from Virginia that are known to us were obtained in 1998. All specimens were captured at blacklight (ultraviolet) traps operated by DNH biologists. The species was collected at seven widely scattered sites (Fig. 1) during 1998-99 as follows:

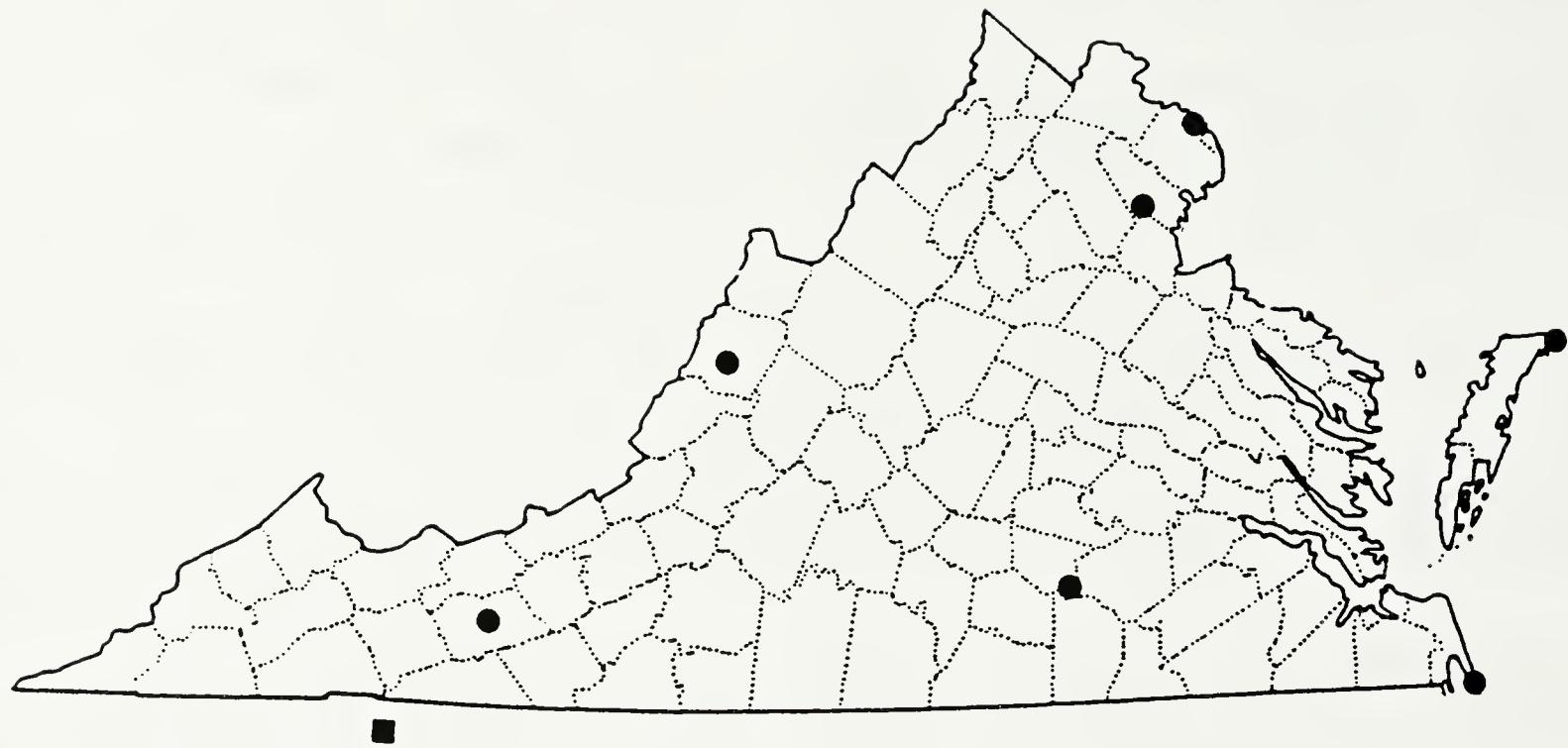


Figure 1. Known distribution of *Noctua pronuba* in Virginia as of 1999. Square indicates approximate location of 1997 collection in North Carolina (after Lafontaine, 1998).

*Accomack Co.*: Assateague Island, Chincoteague National Wildlife Refuge, 24 June 1998 (1), S. M. Roble and A. C. Chazal. Coastal dune scrub; 11 August 1998 (1), S. M. Roble. Maritime pine forest.

*Bath Co.*: Warm Springs Mountain, ca. 3 km SSE Hot Springs (= 2.6 km N Ingalls Field airport terminal), 19 August 1999 (1), S. M. Roble. Montane red oak (*Quercus rubra*) forest; 3600 ft (1097 m).

*Fairfax Co.*: Turkey Run Park, slope adjacent to George Washington Memorial Parkway headquarters, 13 August 1999 (1), C. S. Hobson and D. Sealy. Deciduous forest.

*Nottoway Co.*: Fort Pickett Military Reservation, 0.8 km E and 2.5 km E jct. Range Road and Wilcox Road, 8 July 1999 (3), A. C. Chazal and A. K. Foster. Fire-maintained savannah (two sites).

*Prince William Co.*: Quantico Marine Corps Base, Tokyo Road, 23 June 1998 (4), A. C. Chazal and J. C. Ludwig. Weedy field.

*City of Virginia Beach*: False Cape State Park, Wash Woods Cemetery, 19 August 1998 (1), A. C. Chazal, C.

S. Hobson, and S. M. Roble. Coastal live oak (*Quercus virginiana*) forest.

*Wythe Co.*: Sand Mountain, summit, 3720 ft (1134 m), 23 July 1998 (1), S. M. Roble, C. S. Hobson, and B. Charles. Xeric pine-hardwood forest.

Only 13 specimens of *N. pronuba* were captured despite several hundred trap nights during the past five years, suggesting that the species is still uncommon in Virginia. Capture sites were highly variable and included habitats ranging from montane deciduous forests, maritime pine forest, and a live oak forest to dune scrub and grasslands (both native and non-native). Elevations ranged from sea level to >1100 m. Lafontaine (1998) reported that this species is highly variable and includes several color morphs. The ground color of the three specimens from Fort Pickett is gray, brown, and chestnut, respectively.

Passoa & Hollingsworth (1996) compared the rate of dispersal of *N. pronuba* with another exotic species, the gypsy moth, *Lymantria dispar* L. Although dispersal of the latter species may have been assisted by humans (e.g., transport of eggs attached to vehicles), its maximum rate of spread is only 13 mi (21 km)/year (Liebhold et al., 1995). In contrast, *N. pronuba* is a

migratory species and its dispersal is less likely to be aided by humans. Passoa & Hollingsworth (1996) reported the rate of spread of *N. pronuba* in eastern North America was approximately 800 mi (ca. 1300 km) during a 10 year period, averaging 80 mi (ca. 130 km)/year.

Future sampling for nocturnal Lepidoptera in Virginia will likely document the continued spread and increased abundance of *N. pronuba* in the Commonwealth. Our Bath County site is within 16 km of the West Virginia state line, and the Wythe County site is ca. 65 km from the Kentucky border, indicating that this species will likely colonize these states in the near future if it has not done so already. Covell's (1999) recent checklist of Kentucky Lepidoptera does not include *N. pronuba*.

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